AIR QUALITY ANALYSIS

SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CALIFORNIA
05-MON-068-PM 12.8/13.2

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1.0 EXECUTIVE SUMMARY

The Monterey County Department of Public Works, in cooperation with the California Department of Transportation (Caltrans) proposes to improve the intersection of State Route 68 (SR-68) and Corral de Tierra Road.

This air quality study provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures.

The project area is in the North Central Coast Air Basin (NCCAB) as defined by the California Air Resources Board (ARB). Monterey Bay Unified Air Pollution Control District (MBUAPCD) is responsible for air quality in this basin. The NCCAB is in attainment or maintenance of all federal ambient air quality standards (AAQS), and is non-attainment of state AAQS for ozone and particulate matter smaller than 10 microns (PM_{10}).

Compliance with MBUAPCD Rules and Regulations during construction will reduce construction related air quality impacts from fugitive dust emissions and construction equipment emissions. Because the proposed intersection improvement project would improve traffic operations at the intersection and would not generate new regional vehicular trips, no new regional vehicular emissions would occur, and the project would have a beneficial effect in helping to reduce congestion related pollutant emissions on roadway links in the project vicinity.

The project is located in Monterey County, which is among the counties listed as containing serpentine and ultramafic rock. However, the project site is not in a region of the County that has been identified as containing serpentine or ultramafic rock. Therefore, the impact from Naturally Occurring Asbestos (NOA) during project construction would be minimal to none.

2.0 INTRODUCTION

The SR-68/Corral de Tierra Road Intersection Improvement project (proposed project) addresses operational improvements at the SR-68/Corral de Tierra Road intersection, located in the unincorporated area of Monterey County approximately 13 miles (mi) east of the City of Monterey and approximately 9 mi west of the City of Salinas. Figure 1 shows the regional location of the project and the project vicinity. The operational improvements will widen the SR-68/Corral de Tierra Road intersection to accommodate the construction of a second left-turn lane from westbound SR-68 to southbound Corral de Tierra Road and the construction of a second receiving lane on Corral de Tierra Road.

Caltrans District 5 will be the Lead Agency for California Environmental Quality Act (CEQA) compliance. The County of Monterey (County) Public Works Department will be a Responsible Agency under CEQA. Current funding for the project is local, and it is not anticipated that federal funds will be utilized.

3.0 PROJECT DESCRIPTION

One Build Alternative (as described below) and the No-Build Alternative are being considered for improving the SR-68/Corral de Tierra Road intersection.

No-Build Alternative

The No-Build Alternative assumes that no new improvements would be constructed, other than projects already approved in the area. Under the No-Build Alternative, the roadway's operational conditions will remain at or above the standard of Level of Service D (refer to Traffic Operations Technical Memorandum). Projections indicated that the unimproved intersection would have a Level of Service E in the a.m. peak hour and Level of Service F in the p.m. peak hour by 2024, and therefore, the No-Build Alternative fails to meet the purpose and need of this project.

Build Alternative: Operational Improvements

The proposed project would widen the SR-68/Corral de Tierra intersection to the north of the existing alignment to accommodate the construction of a second (additional) left turn lane from westbound SR-68 onto southbound Corral de Tierra Road. Both of the left turn lanes (in the median of SR-68) would have sufficient length to accommodate deceleration from 53 mi per hour. An additional receiving lane would also be constructed on southbound Corral de Tierra Road. The paved shoulders of Corral de Tierra Road within the project area would be widened to 8 feet (ft) to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.

About 520 ft of Steel Crib retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR-68. The retaining wall would lie below the existing road grade and therefore would not be visible from SR-68. The retaining wall would minimize the footprint of the embankment needed to accommodate the widened road section.

A left turn lane would also be constructed from westbound SR-68 into the Corral de Tierra Country Club driveway. The Corral de Tierra County Club driveway is located east of Corral de Tierra Road on the south side of SR-68.

No provisions for left turns to or from the residential driveway on the north side of SR-68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right-in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.

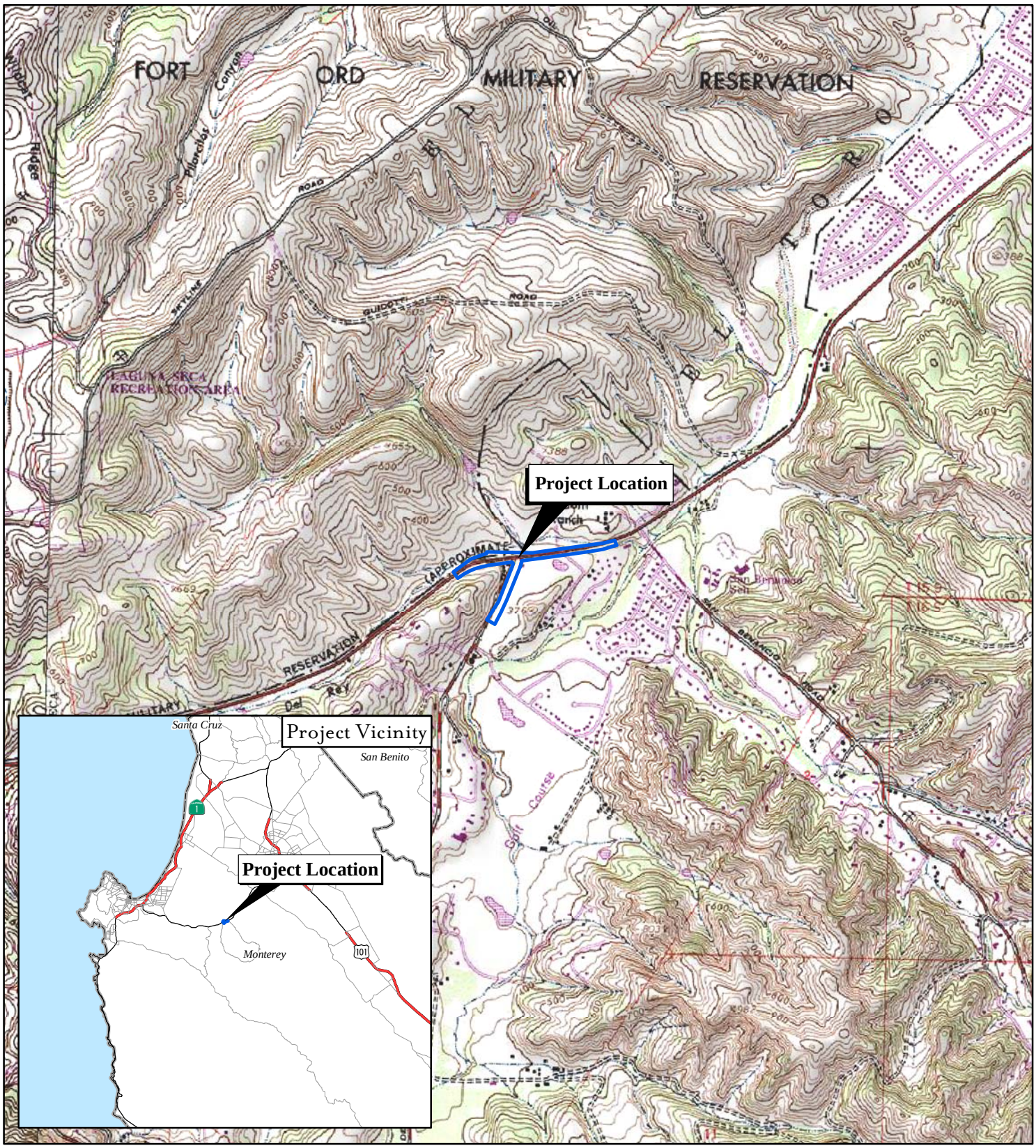

FIGURE 1

N

0 1,000 2,000 Feet

0 300 600 Meters

SR 68 / Corral de Tierra Road
Intersection Improvement Project
Project Location Map

SOURCE: USGS 7.5' QUAD, SPRECKELS, CA (1984); Wood Rodgers (2006)

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Construction of the retaining wall would require removal of any landscape vegetation present (including one young oak tree) along the north embankment of SR-68. The landscape vegetation is not visible to motorists traveling along SR-68 and does not provide any habitat value. As part of the proposed project native vegetation would be planted within the project limits. Additionally, the proposed project would relocate and replace the existing guardrails along the north side of SR-68 and west of the intersection of Corral de Tierra Road. If new or relocated guardrails are erected with metal posts, the posts would be darkened to reduce glare and reflectivity.

All of the work would be constructed within existing State and County rights-of-way, except for a small area of new State right-of-way that would be acquired on the north side of SR-68 just east of the intersection to accommodate relocation of a bus stop, widening and grading. Also, a temporary construction easements would be acquired along the east side of Corral de Tierra Road to accommodate grading near the edge of the County right-of-way (refer to Figure 2: Build Alternative Design Plan). Temporary staging areas for construction equipment and materials would be located in those areas of the existing State and County rights-of-way that are not designated as environmentally sensitive areas. Construction is expected to be completed in a single season.

Figure 2: Build Alternative Design Plan

4.0 SETTING

4.1 REGIONAL CLIMATE AND AIR QUALITY

The proposed project site is located in northern Monterey County. The study area is in the southern portion of the North Central Coast Air Basin (NCCAB), which encompasses Santa Cruz, San Benito, and Monterey Counties. Figure 3 shows the NCCAB Monitoring Stations. The NCCAB is generally bounded by the Diablo Range on the northeast with the southern portion of the Santa Cruz Mountains; this range forms the Santa Clara Valley, which extends into the northeastern tip of the NCCAB. Farther south, the Santa Clara Valley transitions into the San Benito Valley, which runs northwest-southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is Salinas Valley, which extends from Salinas at the northwest end to King City at the southeast end. The northwest portion of the NCCAB is dominated by the Santa Cruz Mountains.

The major source of air pollution in Monterey County is vehicle traffic and agricultural operations. On the Monterey Peninsula, the major source of air pollution in the area is vehicles; the limited agricultural operations in the area have a minimal effect on air quality.

Air quality is a function of topography, meteorology, and emissions. The semipermanent high pressure cell over the Pacific Ocean is the basic controlling factor of the climate in the region. Monterey Bay is an inlet 25 mi wide, which allows marine air at low levels to penetrate the interior.

In the summer, the high pressure cell is dominant, resulting in persistent west and northwest winds across the majority of coastal California. As air descends in the Pacific High, a stable temperature inversion is formed. As temperatures increase, the warmer air aloft expands, forcing the coastal layer of air to move on shore, producing a moderate sea breeze over the coastal plains and valleys. Temperature inversions inhibit vertical air movement and often result in increased transport of air pollutants to inland receptor areas.

The generally northwest-southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates a weak low pressure, which intensifies the onshore air flow during the afternoon and evening.

In the fall, surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build over a period of a few days. It is most often during this season that the north or east winds transport pollutants from either the San Francisco Bay area or the Central Valley into the NCCAB.

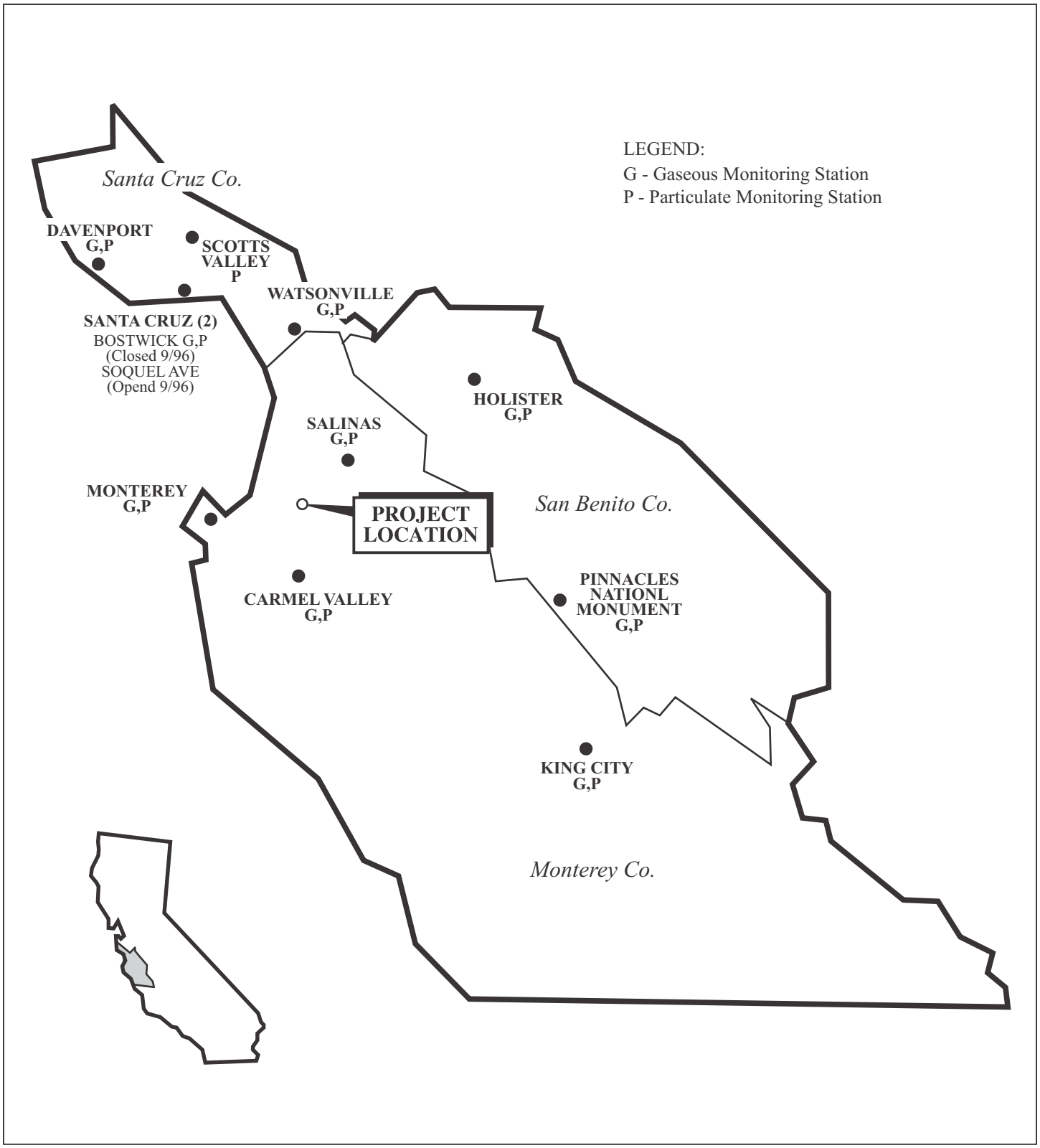

FIGURE 3

SR-68/Corral de Tierra Road
Intersection Improvement Project
Visual Impact Assessment
Monterey County, California

North Central Coast Air Basin
Monitoring Station

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In winter, the Pacific High migrates southward and has less influence on the NCCAB. Air frequently flows in a southeasterly direction out of the Salinas and San Benito Valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep persistent inversions, and the occasional storm systems usually result in good air quality for the NCCAB as a whole in winter and early spring.

Atmospheric particulates are made up of fine solids or liquids such as soot, dust, aerosols, fumes, and mists. A large portion of the total suspended particulate (TSP) in the atmosphere is PM_{10}. These small particulates cause the greatest health risk of all suspended particulates, since they more easily penetrate the defenses of the human respiratory system. Peak concentrations of PM_{10} occur downwind of precursor emission sources. As with ozone, a substantial fraction of PM_{10} forms in the atmosphere as a result of chemical reactions.

Air Pollution Constituents

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established NAAQS. The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health. The NAAQS are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The six criteria pollutants are ozone (O_3), CO, particulates less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The EPA established new national air quality standards for ground-level O_3 and for fine particulate matter (particulate matter 2.5 microns or less in diameter, or $PM_{2.5}$) in 1997.

In April 2003, the EPA was cleared by the White House Office of Management & Budget (OMB) to implement the 8-hour ground-level O_3 standard. ARB provided the EPA with California's recommendations for 8-hour O_3 area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. ARB responded to the EPA's proposal on February 4, 2004. On April 15, 2004, EPA announced the new nonattainment areas for the 8-hour O_3 standard. The designation and classification became effective on June 15, 2004. The Transportation Conformity requirement became effective on June 15, 2005.

The EPA proposed a $PM_{2.5}$ implementation rule in September 2003 and made final designations in December 2004. The $PM_{2.5}$ standard complements existing national and State ambient air quality standards that target the full range of inhalable PM_{10}.

The primary standards for these pollutants are shown in Table A, and the health effects from exposure to the criteria pollutants are described later in this section.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3) [8]	None	
Lead[10,11]	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-month Average[10]	–		0.15 µg/m^3		
Sulfur Dioxide (SO_2)[9]	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[9]	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.030 ppm (for certain areas)[9]	–	
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	–	
Visibility-Reducing Particles[12]	8-Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: ARB, June 7, 2012.

See footnotes on next page.

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1- and 24-hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility-reducing particles are values not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 mg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] To attain the 1-hour standard, the 3-year average of the annual 98^{th} percentile of the 1-hour daily maximum 1-hour average at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[9] On June 2, 2010, the new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10] The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[11] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[12] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basins, respectively

ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the state on a pollutant by pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. The NCCAB's attainment status for each of the criteria pollutants is listed in Table B.

Table B: Attainment Status of Criteria Pollutants in the North Central Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	Revoked June 2005
O_3 8-hour	Nonattainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Attainment	Attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB 2012 (http://www.arb.ca.gov/desig/desig.htm).

Ozone

O_3 (smog) is formed by photochemical reactions between NO_X and reactive organic gases (ROG) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. Effective June 15, 2005, the EPA revoked in full the federal 1-hour O_3 ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compacts all outside California. The entire NCCAB is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The NCCAB is in attainment for the federal 8-hour O_3 standard.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The NCCAB is in attainment for the federal and State CO standards.

Nitrogen Oxides

NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other

pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire NCCAB has not exceeded either federal or State standards for nitrogen dioxide in the past 3 years with published monitoring data. It is designated as an attainment area under the federal and State standards.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The NCCAB is in attainment with both federal and State SO_2 standards.

Reactive Organic Compounds

Reactive organic compounds (ROC) are formed from combustion of fuels and evaporation of organic solvents. ROC is a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere much quicker during the winter, when sunlight is limited and photochemical reactions are slower. ROC is regulated as a precursor to ozone with no federal or State attainment standards.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 micrometers in diameter, or PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle (less than 2.5 microns in diameter, or $PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. Coarse particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that fine particles ($PM_{2.5}$), which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The NCCAB is a nonattainment area for the for the State PM_{10} standards and in attainment for the federal PM_{10} standards. The NCCAB is in attainment for the federal and State $PM_{2.5}$ standards.

Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire NCCAB is in attainment for federal and State lead standards.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization's in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas (GHG) Mitigation" is a term for reducing GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).[1]

Transportation sources (passenger cars, light duty trucks, other trucks, buses, and motorcycles) in the State of California make up the largest source (second to electricity generation) of GHG emitting sources. Conversely, the main source of GHG emissions in the United States (US) is electricity generation followed by transportation. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources: (1) improve system and operation efficiencies, (2) reduce growth of vehicle miles traveled (VMT), (3) transition to lower GHG fuels, and (4) improve vehicle technologies. To be most effective, all four should be pursued collectively. The following regulatory setting section outlines State and federal efforts to comprehensively reduce GHG emissions from transportation sources.

State. With the passage of several pieces of legislation, including State Senate and Assembly Bills and Executive Orders (EOs), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the State level.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year. In June 2009, the EPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning

[1] http://climatechange.transportation.org/ghg_mitigation/

with model year 2009. California agencies will be working with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017–2025.

EO S-3-05: Signed on June 1, 2005, by Governor Arnold Schwarzenegger, the goal of this EO is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below the 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.

AB 32, the Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a plan that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions of GHGs." EO S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

EO S-01-07: Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill (SB) 97 (Chapter 185, 2007): SB 97 required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State *CEQA Guidelines* for addressing GHG emissions. The Amendments became effective on March 18, 2010.

Caltrans Director's Policy 30 (DP-30) Climate Change (approved June 22, 2012): This policy is intended to ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. This policy contributes to Caltrans stewardship goal to preserve and enhance California's resources and assets.

Federal. Although climate change and GHG reduction is a concern at the federal level, currently there are no regulations or legislation that have been enacted specifically addressing GHG emission reductions and climate change at the project level. Neither the EPA nor FHWA has promulgated explicit guidance or methodology to conduct project-level GHG analysis. As stated on FHWA's climate change website,[1] climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

[1] http://www.fhwa.dot.gov/hep/climate/index.htm

The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

EO 13514 is focused on reducing GHGs internally in federal agency missions, programs, and operations, but also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a US strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 US 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the CAA, and that the EPA has the authority to regulate GHGs. The Court held that the EPA Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed GHGs, carbon dioxide (CO_2), CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009.[1] On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

The EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.[2]

The final combined EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the

1 http://www.epa.gov/climatechange/endangerment.html
2 http://epa.gov/otaq/climate/regulations.htm

automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 million metric tons (MMT) and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

On November 16, 2011, the EPA and NHTSA issued their joint proposal to extend this national program of coordinated greenhouse gas and fuel economy standards to model years 2017 through 2025 passenger vehicles.

4.2 LOCAL AIR QUALITY

The site is located within MBUAPCD jurisdiction. The MBUAPCD maintains ambient air quality monitoring stations throughout the NCCAB. The air quality monitoring station closest to the site that monitors all of the criteria pollutants is the Salinas Station. The criteria pollutants monitored at this station are presented in Table C. CO, NO_2, $PM_{2.5}$, and O_3 levels monitored at this station have not exceeded State and federal standards in the past five years. The State PM_{10} standard was exceeded twice in 2008. The federal PM_{10} standard was not exceeded in the past five years.

4.3 REGIONAL AIR QUALITY PLANS

The 1976 Lewis Air Quality Management Act established the MBUAPCD and other air districts throughout the State. The Federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

ARB coordinates and oversees both State and federal air pollution control programs in California. ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for federal EPA approval. ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by ARB to classify air basins as

Table C: Ambient Air Quality Standards at the Salinas Air Monitoring Station

Pollutant	Standard	2007	2008	2009	2010	2011
CO						
Max 1-hr concentration (ppm)		2.0	2.2	1.6	1.3	1.4
No. days exceeded: State Federal	> 20 ppm/1-hr > 35 ppm/1-hr	0 0	0 0	0 0	0 0	0 0
Max 8-hr concentration (ppm)		1.2	0.9	0.9	0.8	1.0
No. days exceeded: State Federal	≥ 9 ppm/8-hr ≥ 9 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
O_3						
Max 1-hr concentration (ppm)		0.067	0.078	0.077	0.073	0.065
No. days exceeded: State	> 0.09 ppm/1-hr	0	0	0	0	0
O_3						
Max 8-hr concentration (ppm)		0.058	0.067	0.067	0.061	0.056
No. days exceeded: State Federal	> 0.070 ppm/8-hr > 0.075 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
PM_{10}						
Max 24-hr concentration (ppm)		37	52	41	39	18
No. days exceeded: State Federal	> 50 $\mu g/m^3$ > 150 $\mu g/m^3$	0 0	2 0	0 0	0 0	0 0
$PM_{2.5}$						
Max 24-hr concentration (ppm)		19..2	17.8	18.7	16.2	19.7
No. days exceeded: Federal	> 35 $\mu g/m^3$	0	0	0	0	0
NO_2						
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	0.050	0.049	0.040	0.036	0.040
No. days exceeded		0	0	0	0	0
Annual avg. concentration: Federal	0.053 ppm annual avg.	0.007	0.007	0.006	0.006	0.006
No. days exceeded		0	0	0	0	0

Source: EPA and ARB 2007 to 2011.

"attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. ARB has divided the State into 15 air basins. Significant authority for air quality control within the air basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

The California Clean Air Act (CCAA) provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, at a mall, and on highways. As a State agency, ARB regulates motor vehicles and fuels for their emissions.

Regional Air Quality Management Plan

As required by the CCAA, the MBUAPCD adopted the 1991 AQMP for the Monterey Bay Region. The AQMP addressed attainment of the State AAQS for O_3. The AQMP recommended adoption of 20 measures to control emissions of reactive organic gases (ROG) from stationary sources, 5 measures for stationary sources of NO_X, and 8 transportation control measures. Since the 1991 AQMP was adopted, control requirements have been reduced. In December 1994, the MBUAPCD adopted the 1994 AQMP, which showed that the MBUAPCD could achieve the required 20 percent reduction in both ROG and NO_X emissions by 1997 without adopting any additional regulations. The 1997 AQMP was adopted in December 1997. The 2000 AQMP was adopted in May 2001. The 2004 AQMP was adopted in September 2004. The 2008 AQMP was adopted in August 2008. This is the fifth revision of the 1991 AQMP to address the O_3 attainment status for the Monterey Bay Region.

The CCAA requires that projects receiving federal funds demonstrate conformity to the local AQMP. Conformity guidelines for the AQMP extend these requirements to all regionally significant projects, regardless of whether federal funding is being sought. The AQMP contains guidelines on how to demonstrate conformity for population related, nonpopulation related, and indirect source (institutional, commercial, and industrial) projects.

In addition to the State-mandated AQMP, the MBUAPCD has prepared a number of federally required plans to meet its obligations under the federal CAA.

4.4 METHODOLOGY

This air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Long-term mobile emissions associated with the proposed project would be less than the No Project Alternative due to improved traffic flow in the project area, with the same projected future trips in the project vicinity. However, emissions reductions associated with such improvements are difficult to quantify. Therefore, no emissions calculations are provided in this analysis for regional vehicular emissions.

4.5 THRESHOLDS OF SIGNIFICANCE

Construction Impacts

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. Air quality impacts can nevertheless be acute during construction periods, resulting in significant localized impacts to air quality.

Construction activities (e.g., excavation, grading, on-site vehicles) that directly generate 82 pounds per day or more of PM_{10} would have a significant impact on local air quality when they are located nearby and upwind of sensitive receptors. However, MBUAPCD approved PM_{10} dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that direct emissions under individual or cumulative conditions would not cause the exceedance of the State PM_{10} AAQS (50 $\mu g/m^3$) at existing receptors as averaged over 24 hours, the impact would not be considered significant. If ambient air quality already exceeds the State AAQS, a project would contribute substantially to this violation if it would emit 82 pounds per day or more. A construction site with minimal earthmoving activity would have potential significant PM_{10} impacts when active construction covers 8.1 acres or more per day. A construction site with earthmoving activity would have potential significant PM_{10} impacts when active construction covers 2.2 acres or more per day.

Construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors, and front-end loaders, which temporarily emit precursors of O_3 (i.e., ROG or NO_X), are accommodated in the emission inventories of State and federally required air plans and would not have a significant impact on the attainment and maintenance of O_3 AAQS. The MBUAPCD should be consulted regarding emissions from nontypical equipment (e.g., grinders and portable equipment).

Construction projects that may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts.

Other Impacts

Emissions from long-term operations generally represent a project's most substantial air quality impact. Table D summarizes the project level threshold of significance for operational impacts by pollutant. An exceedance of any threshold would represent a significant impact on local or regional air quality. When comparing a project's emissions to the thresholds of significance, local conditions should be considered whenever possible.

Projects that would emit 137 pounds per day or more of direct and indirect ROG emissions would have a significant impact on regional air quality by emitting substantial amounts of O_3 precursors. Such projects would significantly impact attainment and maintenance of O_3 AAQS. Similarly, projects that would emit 137 pounds per day or more of direct and indirect NO_X emissions would generate substantial emissions and have a significant impact on regional air quality.

Projects that could generate 82 pounds per day or more of PM_{10} at the project site (e.g., quarries, truck stops) would result in substantial air emissions and have a significant impact on local air quality. However, District approved dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that emissions would not cause an exceedance of the State PM_{10} standard (50 $\mu g/m^3$) at an existing or reasonably foreseeable receptor as averaged over 24 hours, the impact would not be considered significant. If ambient PM_{10} levels already exceed the State AAQS, the project would

contribute substantially to the violation if it would emit more than 82 pounds per day. This would be considered a significant individual and cumulative impact on local air quality, since the background concentration reflects the collective contribution of PM_{10} from nearby sources.

Table D: Thresholds of Significance for Criteria Pollutants of Concern: Operational Impacts[1]

Pollutant	Threshold(s) of Significance
ROG	137 lb/day (direct + indirect)
NO_X as NO_2	137 lb/day (direct + indirect)
PM_{10}	82 lb/day (on-site)[2]
	AAQS exceeded along unpaved roads (off-site)
CO	LOS at intersection/road segment degrades from D or better to E or F, or volume to capacity (V/C) ratio at intersection/road segment at LOS E or F increases by 0.05 or more, or delay at intersection at LOS E or F increases by 10 seconds or more, or reserve capacity at unsignalized intersection at LOS E or F decreases by 50 or more.
	550 lb/day (direct)[3]
SO_X as SO_2	150 lb/day (direct)

Source: MBUAPCD, 2008.

Projects that would indirectly generate PM_{10} from travel on unpaved roads could result in substantial off-site emissions and significantly impact local air quality. PM_{10} dispersion modeling should be undertaken to determine whether indirect emissions along one or more unpaved road would cause the exceedance of the State PM_{10} AAQS at an existing or reasonably foreseeable receptor as averaged over 24 hours. If so, the impact would be considered significant.

Carbon Monoxide

Indirect sources that would significantly affect levels of service at intersections or road segments could cause or substantially contribute to violation of State or national AAQS for CO. The following would represent a potentially significant impact to intersections or road segments after mitigation (references are to peak hour LOS):

[1] Projects that emit other criteria pollutant emissions would have a significant impact if emissions would cause or substantially contribute to the violation of State or national AAQS. Criteria pollutant emissions could also have a significant impact if they would alter air movement, moisture, temperature, or climate or create objectionable odors in substantial concentrations. When estimating project emissions, local or project specific conditions should be considered.

[2] District approved dispersion modeling can be used to refute (or validate) a determination of significance if modeling shows that emissions would not cause or substantially contribute to an exceedance of State and national AAQS.

[3] Modeling should be undertaken to determine whether the project would cause or substantially contribute (550 lb/day) the exceedance of CO AAQS. If not, the project would not have a significant impact.

- Intersections or road segments that operate at LOS D or better that would operate at LOS E or F with the project's traffic.
- Intersections or road segments that operate at LOS E or F where the V/C ratio would increase 0.05 or more with the project's traffic.
- Intersections that operate at LOS E or F where delay would increase by 10 seconds or more with the project's traffic.
- Unsignalized intersections that operate at LOS E or F where the reserve capacity would decrease by 50 or more with the project's traffic. This criterion is based on the turning movement with the worst reserve capacity.
- The project would generate substantial heavy-duty truck traffic or generate substantial traffic along urban street canyons or near a major stationary source of CO.

If any of these scenarios would occur, CO modeling should be undertaken to determine whether indirect source emissions would cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If modeling demonstrates that the project would not cause an exceedance of CO AAQS, the project would not have a significant impact on local air quality. If there is an existing or projected exceedance already, a project would substantially contribute to that violation if indirect sources would generate 550 lb/day.

For cumulative analyses, the traffic impact of the project should be combined with that of other closely related past, present, and reasonably foreseeable future projects. The cumulative impact should be compared to the same criteria above to determine whether cumulative development could cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If so, CO modeling should be undertaken.

Sources that directly emit 550 pounds or more per day of CO (e.g., industrial operations) would result in substantial air emissions and have a significant impact on local air quality. However, CO modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS (9 ppm [eight-hour average] or 20 ppm [one-hour average]) at existing or reasonably foreseeable receptors, the project would not have a significant impact on local air quality.

Oxides of Sulfur (SO_X)[1]

Sources that directly emit 150 pounds or more per day of SO_X as SO_2 (e.g., industrial operations) would result in substantial air emissions and have a significant impact on air quality. However, modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS at existing or reasonably foreseeable receptors, the project would not have a significant impact on air quality.

[1] SO_X as SO_2 is formed by the combustion of sulfur containing materials (e.g., coal fuel oil, tires). High levels of ambient SO_2 may increase the risk of adverse symptoms in asthmatic patients.

Other Pollutants

Projects that emit other criteria pollutants could have a significant impact if total emissions would cause or substantially contribute to the violation of State or national AAQS. Projects that have the potential to emit toxic air contaminants could also result in significant air quality impacts (Chapter 9). In addition, projects that alter air movement, moisture, temperature, or climate either locally or regionally could have significant air quality impacts.

Projects that would emit pollutants associated with objectional odors in substantial concentrations could result in significant impacts if odors would cause injury, nuisance, or annoyance to a considerable number of persons or would endanger the comfort, health, or safety of the public. Because people have mixed reactions to odors, the nuisance level of an odor varies. Estimation of potential odor impacts should be coordinated with the MBUAPCD.

Temporary Emissions

The significance of projects that emit pollutants on a temporary or infrequent basis is based on a variety of factors, including the pollutant(s) in question and potential to create a violation or contribute substantially to an existing or projected violation. Examples of such temporary projects include occasional military exercises or annual activities that generate substantial emissions for a short time, excluding construction projects. Temporary projects will be reviewed by the MBUAPCD on a case-by-case basis.

Indirect emissions come from mobile sources that access the project site but generally emit off site. Direct emissions are emitted on site (i.e., stationary sources, on-site mobile equipment). Stationary source emissions that comply with MBUAPCD regulations are presumed to be less than significant under most circumstances. However, if a project includes other sources that are exempt from MBUAPCD permit authority, all direct and indirect emissions should be compared to the threshold(s) of significance.

5.0 IMPACTS

Air quality impacts resulting from the proposed project development can be divided into both short-term and long-term effects. Short-term emissions are associated with project construction. Long-term impacts are typically associated with build out conditions and are from vehicle exhausts. The proposed project neither attracts vehicles nor creates direct emissions. While vehicles will use this segment of roadway, these vehicles are (or will be) on the road already and are not a direct result of project implementation. Thus, at the completion of construction, any potential impacts associated with the proposed project are directly related to local shifts in traffic patterns and local air quality (i.e., the creation of CO hot spots).

5.1 SHORT-TERM CONSTRUCTION IMPACTS

The CEQA Guidelines published by MBUAPCD note that construction activities (grading, excavation, and on-site vehicular traffic) would have a significant effect on local air quality when they emit greater than 82 pounds of PM_{10} near sensitive receptors. If MBUAPCD approved dispersion modeling demonstrates that direct emissions under individual or cumulative conditions would not cause an exceedance of state PM_{10} standards, the impact would not be considered significant. MBUAPCD has determined that when minimal earthmoving (grading) takes place, disturbance of greater than 8 acres can exceed the 82 pound per day threshold. When both grading and excavation occur, disturbance of greater than 2.2 acres can exceed the emissions threshold.

Construction projects that temporarily emit precursors of O_3 (i.e., ROG or NO_X) are accommodated in the emission inventories of State and federally required air plans and would not have a significant impact on the attainment and maintenance of O_3 AAQS. In addition, construction projects that may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts.

Heavy construction is a source of dust emissions that may have substantial temporary effects on local air quality. Building and road construction are the construction categories with the highest emissions potential. Construction emissions are associated with land clearing, blasting, ground excavation, cut and fill operations, and the construction of the particular facility itself. Dust emissions also vary substantially from day to day, depending on the level of activity, the specific operations, and the weather conditions. A large portion of the emissions results from equipment traveling over unpaved surfaces at the construction site.

The total area of disturbance (grading and excavation) for the SR-68/Corral de Tierra Road Intersection project is anticipated to be less than 2 acres. This level of activity is below the MBUAPCD threshold of significance for project's when both grading and excavation would occur. Table E (PM_{10} Minimization Measures) is attached as guidelines for the Resident Engineer in case the required daily watering is insufficient to keep visible dust from blowing or being tracked off-site.

Caltrans Standard Specifications pertaining to dust control and dust palliative requirements would further reduce dust emissions during construction. These specifications are part of all construction contracts and require conformance with all State and/or MBUAPCD Rules and Regulations.

Naturally Occurring Asbestos

The project is located in Monterey County, which is among the counties listed as containing serpentine and ultramafic rock. However, the project site is not in a region of the county that has been identified as containing serpentine or ultramafic rock (A General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos, Department of Conservation, Division of Mines and Geology, August 2000). Therefore, the impact from Naturally Occurring Asbestos (NOA) during project construction would be minimal to none.

5.2 LONG-TERM REGIONAL IMPACTS

The proposed project would improve the flow of traffic through this intersection. The project would not add any additional population to the area and would not add additional traffic to the roadway. Therefore, no long-term regional project related air quality impacts are anticipated.

5.3 LONG-TERM MICROSCALE PROJECTIONS

CO Hot-Spot Analysis

Ambient local air quality is most affected directly by CO emissions from motor vehicles. CO is typically the contaminant of greatest concern because it is the pollutant created in greatest abundance by motor vehicles and does not readily disperse into the air. Because CO does not readily disperse into the atmosphere, areas of vehicle congestion create “pockets” of CO called “hot spots.” These pockets have the potential to exceed the State one-hour standard of 20 ppm and/or the eight-hour standard of 9.0 ppm.

The traffic data provided by Wood Rodgers (Project Study Report - Traffic Operations Analysis) demonstrates that the proposed project will improve the SR-68/Corral de Tierra Road intersection level of service. Based on the criteria listed in Table D, it is unlikely that the proposed project will result in a CO hot spot. Therefore, a detailed CO hot spot analysis is not required for this project.

Particulate Matter (PM_{10} and $PM_{2.5}$) Analysis

The proposed project is located within a federal attainment area for $PM_{2.5}$ and PM_{10}. Therefore, a particulate matter hot-spot analysis is not required for conformity purposes.

5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY ANALYSIS

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQMP’s main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the

AQMP. For a project in the NCCAB to be consistent with the AQMP, the pollutants emitted from the project must not exceed the MBUAPCD significant threshold or cause a significant impact on air quality. If feasible mitigation measures can be implemented to reduce the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the AQMP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways: it fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed, and it provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQMP (adopted in August 2008). Since the AQMP is based on projections from local General Plans, projects that are consistent with the local General Plan are considered consistent with the AQMP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQMP. The air quality models use project specific data to estimate the quantity of pollutants generated from the implementation of a project. The results for the without project and with project scenarios in the horizon year are compared to the AQMP's air quality projections.

As discussed above, the proposed project will not significantly contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the County of Monterey's General Plan and is therefore consistent with the AQMP.

5.5 CLIMATE CHANGE

An individual project does not generate enough GHG emissions to significantly influence global climate change (GCC). Rather, GCC is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG.[1] In assessing cumulative impacts, it must be determined whether a project's incremental effect is "cumulatively considerable." See *CEQA Guidelines* Sections 15064(h)(1) and 15130. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented (Figure 4). The base year used for forecasting emissions is the average of Statewide emissions in the GHG inventory for 2006, 2007, and 2008.

[1] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the SCAQMD (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

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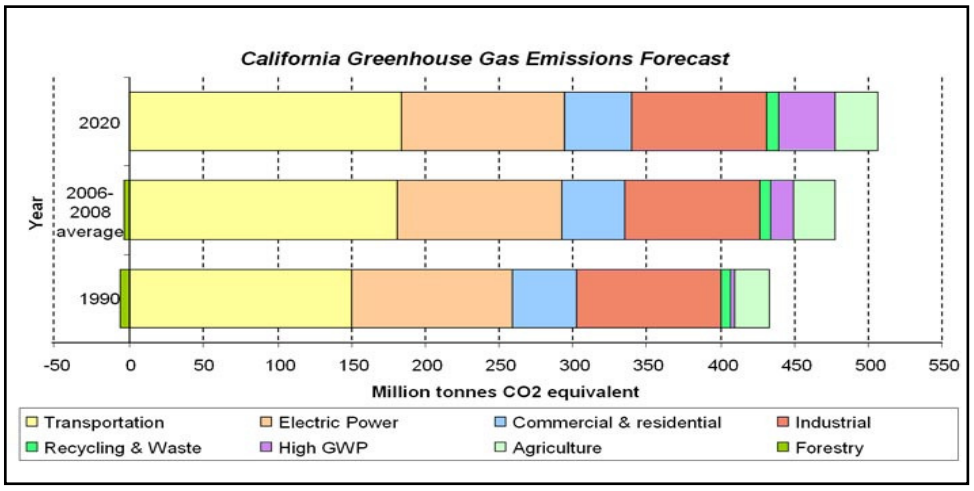

Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Figure 4: California Greenhouse Gas Forecast

The California Department of Transportation (Department) and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emissions reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the California Department of Transportation (Department) has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006).[1]

One of the main strategies in the Caltrans Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 mph) and speeds over 55 mph; the most severe emissions occur from 0–25 mph (see Figure 5). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

The purpose of the project is to improve operational deficiencies at the intersection without increasing the capacity of SR-68 or Corral de Tierra Road. Therefore, implementation of the proposed project would not result in a substantial increase in CO_2 emissions compared to the No Build Alternative.

[1] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

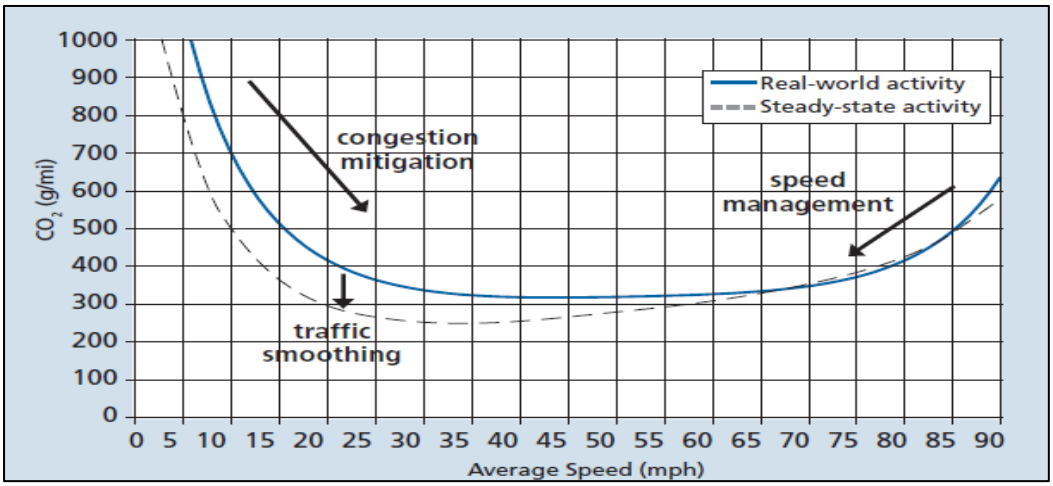

Figure 5: Possible Effect of Traffic Operation Strategies in Reducing On-Road CO2 Emission[1]

Construction Emissions. GHG emissions for transportation projects can be divided into those produced during construction and those produced during operation. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. As discussed below, idling times would be restricted to 10 minutes in each direction for passenger cars during lane closures and 5 minutes for construction vehicles. Restricting idling times reduces harmful emissions from passenger cars and diesel-powered construction vehicles.

CEQA Conclusion. While construction would result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions due to construction would be offset by the improvement in operational GHG emissions. The regional GHG impact is thus considered less than significant. Therefore, the proposed project would not contribute cumulatively to climate change.

AB 32 Compliance. Caltrans continues to be actively involved in the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the State's transportation system, education, housing, and waterways, including $100.7 billion in transportation

[1] Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010)<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that, combined, are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements, as depicted in Figure 6.

Figure 6: Mobility Pyramid

Caltrans is supporting efforts to reduce VMT by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that control of the fuel economy standards is held by EPA and ARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the University of California Davis.

Table E summarizes the Caltrans and Statewide efforts that Caltrans is implementing in order to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

Table E: Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	IGR	Department	Local governments	Review and seek to mitigate development proposals	Not estimated	Not estimated
	Planning Grants	Department	Local and regional agencies and other stakeholders	Competitive selection process	Not estimated	Not estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Department	Regional plans and application process	0.975	7.8
Operational Improvements and ITS Deployment	Strategic Growth Plan	Caltrans	Regional agencies	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy and GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not estimated	Not estimated
Educational and Information Program	Office of Policy Analysis & Research	Department, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not estimated	Not estimated
Fleet Greening and Fuel Diversification	Division of Equipment	Department of General Services		Fleet replacement B20 B100	0.0045	0.0065 0.45 0.0225
Nonvehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy conservation opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and construction industries		2.5% limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	3.6
Goods Movement	Office of Goods Movement	CalEPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not estimated	Not estimated
Total					**2.66**	**18.67**

ARB = California Air Resources Board
BT&H = Business, Transportation, and Housing Agency
CalEPA = California Environmental Protection Agency
CEC = California Energy Commission
CO_2 = carbon dioxide
Department = California Department of Transportation
GHG = greenhouse gas
IGR = Intergovernmental Review
ITS = Intelligent Transportation Systems
MMT = million metric tons
MPOs = Metropolitan Planning Organizations

- Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. Landscaping would be provided where necessary within the project area to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset any potential CO_2 emissions increase.
- The project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals, to the extent feasible. LED bulbs (or balls, in the stoplight vernacular) cost $60 to $70 apiece but last 5 to 6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.
- According to Caltrans' Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with Title 13, California Code of Regulations §2449(d)(3), adopted by the ARB on June 15, 2008. This regulation restricts idling of construction vehicles to no longer than 5 consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel-powered construction vehicles.

Adaption Strategies. "Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and increased intensity, and greater frequency and intensity of wildfires. These changes may affect transportation infrastructure in various ways, such as by damage to roadbeds due to longer periods of intense heat; increased storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency report on October 14, 2010, outlining recommendations to President Obama for how Federal Agency policies and programs can better prepare the US to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the federal government implement actions to expand and strengthen the Nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaption must involve the natural environment as well. Efforts are underway on a Statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed EO S-13-08, which directed a number of State agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

The California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, State, and federal public and private entities to develop. The California Climate Adaptation Strategy (Dec 2009),[1] which summarizes the best known science on climate change impacts to California, assesses California's vulnerability to the identified impacts and then outlines solutions that can be implemented within and across State agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08, which specifically asked the Resources Agency to identify how State agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other State agencies were involved in the creation of the Adaptation Strategy document, including the EPA; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

The Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010[2] to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, Oregon, and Washington, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;
- The range of uncertainty in selected sea level rise projections;
- A synthesis of existing information on projected sea level rise impacts to State infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems;
- A discussion of future research needs regarding sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all State agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge, and storm wave data.

Until the final report from the National Academy of Sciences is released, interim guidance has been released by the Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the State's infrastructure due to projected sea level rise.

[1] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

[2] The Sea Level Rise Assessment report is currently due to be completed in 2012 and will include information for Oregon and Washington State as well as California.

All projects for which a Notice of Preparation has been filed, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of EO S-13-08, may, but are not required to, consider these planning guidelines.

Furthermore, EO S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance, and operational improvements of the system and economy of the State. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without Statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once Statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment, which is due to be released in 2012.

While estimates vary, sea level is expected to rise an additional 22 to 35 inches by 2100.[1] Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast.[2] The area of the project would not be affected by a 1-meter (approximately 39-inch) rise in sea level. Therefore, the potential effects of climate change on the proposed project would not be significant.

1 California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* CEC-500-2006-077. July.

2 California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

6.0 STANDARD CONDITIONS

Provisions for the regulation of construction related vehicle and dust emissions are incorporated into the Caltrans Standard Specifications, which must be followed by all contractors. Compliance with these specifications will further reduce construction related air quality impacts. The MBUAPCD CEQA Air Quality Guidelines have a list of dust minimization measures, as shown in Table F, which should be implemented by every project during construction.

Other standard measures recommended for reduction of air pollutants generated by vehicle and equipment exhaust during construction include:

- The construction contractor shall select the construction equipment used on site based on low emission factors and high energy efficiency. The construction contractor shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall time the construction activities so as not to interfere with peak hour traffic and to minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.
- The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.
- ARB-approved on-road diesel fuel shall be used in all diesel construction equipment when available.

Table F: Minimization Measures: Construction Emission Pollutant: PM_{10}

Minimization Measure	Source Category	Effectiveness	Source
Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.	Fugitive emissions from active, unpaved construction areas	50%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Prohibit all grading activities during periods of high wind (over 15 mph)	Grading Emissions	Reduces potential for exceedance	SCAQMD, "SIP for PM10 in the Coachella Valley" 1990. P. 5-15
Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).	Wind erosion from inactive areas	Up to 80%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Apply nontoxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.	Wind erosion from inactive areas	Up to 80%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Haul trucks shall maintain at least 2'0" of freeboard	Spills from haul trucks	90%	MBUAPCD
Cover all trucks hauling dirt, sand, or loose materials.	Spills from haul trucks	90%	MBUAPCD
Plant tree windbreaks on the windward perimeter of the construction project if adjacent to open land.	Wind erosion from inactive areas	4% (15% for mature trees)	SCAQMD, "SIP for PM_{10} in the Coachella Valley" 1990. P. 5-15.
Plant vegetative ground cover in disturbed areas as soon as possible.	Wind erosion from inactive areas	5–99% (based on planting plan)	SCAQMD, "SIP for PM_{10} in the Coachella Valley" 1990. P. 5-15.
Cover inactive storage piles.	Wind erosion from storage piles	Up to 90%	U.S. EPA "AP-42, Vol. 1." P. 11.2.3-4.
Install wheel washers at the entrance to construction sites for all exiting trucks.	On-road entrained PM_{10}	50%	SCAQMD, SIP for PM_{10} in the Coachella Valley" 1990. P. 4-11.
Pave all roads at construction sites.	On-road entrained PM_{10}	90%	SCAQMD, SIP for PM_{10} in the Coachella Valley" 1990. P. 4-12.
Sweep streets if visible soil material is carried out from the	On-road entrained	34%	SCAQMD, SIP for

construction site.	PM_{10}		PM_{10} in the Coachella Valley" 1990. P. 5-18.
Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the MBUAPCD shall also be visible to ensure compliance with Rule 402 (nuisance)	All Emissions	Minimizes nuisance levels	MBUAPCD
Limit the area under construction at any one time. *(Limit grading to six acres per day.)*	Fugitive emissions from active, unpaved construction areas	71 lbs/acre/day	U.S. EPA "AP -42 Vol. 1."
Note: These effectiveness estimates are not additive within a source category (i.e., the benefit of two or more mitigation measures that address the same source of emissions would not be the sum of both measures).			

Source: MBUAPCD CEQA Air Quality Guidelines, February 2008.

7.0 REFERENCES

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ATTACHMENT A

CONCEPT PLANS

ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

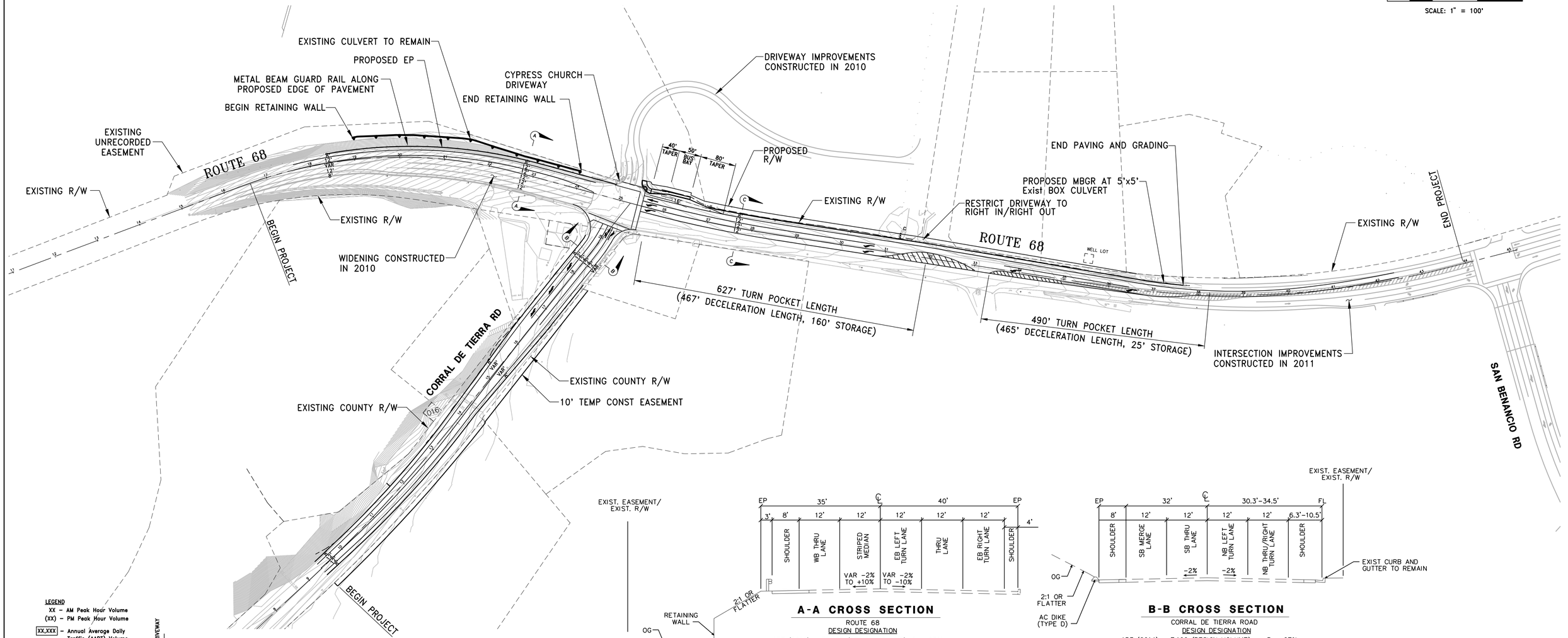
BUILD ALTERNATIVE

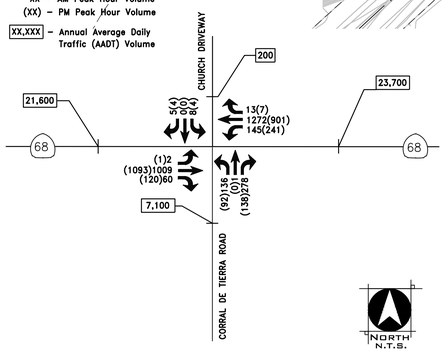
COUNTY OF MONTEREY CALIFORNIA

JANUARY, 2013

100' 50' 0 100' 200'

SCALE: 1" = 100'





*NOTE: This volume scenario does not include traffic volumes from the proposed Shopping Center on the south-east quadrant of the project intersection.

TRAFFIC DESIGN VOLUME YEAR 2014

A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 21,600 (DESIGN VOLUME)
ADT (20 YEAR) = 38,500
DHV = 2,484
ESAL = 5,775,045

D = 57%
T = 4.0%
V = 55 MPH
TI_{20} = 11.0

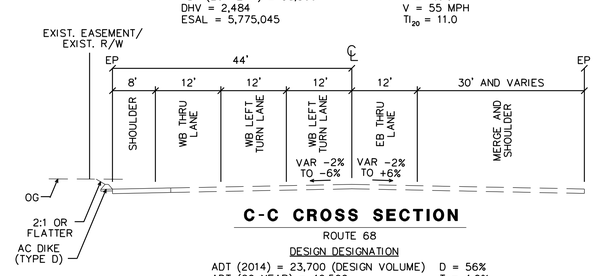
B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME)
ADT (20 YEAR) = 8,900
DHV = 619
ESAL = 735,017

D = 67%
T = 2.0%
V = 55 MPH
TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME)
ADT (20 YEAR) = 40,500
DHV = 2,725
ESAL = 6,060,788

D = 56%
T = 4.0%
V = 55 MPH
TI_{20} = 11.0

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